

AMENDMENTS TO THE CLAIMS

Claims 1-15 (Canceled).

16. (New) A process for manufacturing an optical compensation layer (OCL) composed of a monomer material and/or a prepolymer material and having an optical axis perpendicular to a surface thereof, said process comprising (1) pouring the monomer material or the prepolymer material over

- (a) a rigid substrate surface,
- (b) between two rigid substrate surfaces separated by deformable spacers, or
- (c) between two rigid substrate surfaces separated by non-deformable spacers,

to form a material layer;

(2) polymerizing said material layer at an elevated temperature which is lower than a glass phase transition temperature of the monomer material or the prepolymer material, such that with (a) or (b) said material layer is fully cured, or with (c) said material layer polymerizes at room temperature to a first level at which viscosity of the monomer material or the prepolymer material is increased to a point that the monomer material or the prepolymer material does not leak out from between the substrate surfaces,

followed by removal of the non-deformable spacers, and completion of the polymerizing at said elevated temperature so that the material layer unrestrainably shrinks in a direction perpendicular to the substrate surface or the substrate surfaces, wherein said polymerizing of said material layer is conducted in such a manner that deformation of macromolecules forming the monomer material or the prepolymer material, which is induced by an anisotropic mechanical strain due to shrinking the material layer in contact with and parallel to the substrate surface or the substrate surfaces, is permanently frozen-in by cross-polymerization; and

(3) cooling said material layer following said polymerizing to room temperature.

17. (New) Process according to claim 16, wherein said polymerizing is thermally activated at the temperature lower than said glass phase transition temperature, and resulting optical birefringence is optically reduced by reheating the layer polymerized to a temperature approximate a glass phase transition temperature of the polymer.

18. (New) Process according to claim 16, wherein said polymerizing is activated at least initially by UV light.

19. (New) Process according to claim 16, wherein activation of said polymerizing is by UV light and said

pouring of said monomer material or said prepolymer material is in accordance with (c), said activation by said UV light being in two stages, first to a level allowing removal of the non-deformable spacers, and secondly to completion substantially in absence of mechanical strains in a direction perpendicular to the material layer polymerized.

20. (New) A process for manufacturing an optical compensation layer (OCL) for angular compensation of phase retardation of a transmitted light through a liquid crystal layer (LCL), said OCL being composed of a monomer material or a prepolymer material and having an optical axis perpendicular to a surface of said OCL, with said OCL and said LCL having an optical thickness which is a product of birefringence (Δn_{OCL} , Δn_{LCL}) and thickness of the layer (d_{LCL} , d_{OCL}) respectively, said process comprising

(1) pouring a predefined mass of the monomer material or the prepolymer material over

- (a) a rigid substrate surface,
- (b) between two rigid substrate surfaces separated by deformable spacers, or
- (c) between two rigid substrate surfaces separated by non-deformable spacers,

to form a material layer;

(2) polymerizing said material layer at an elevated temperature which is lower than a glass phase transition temperature of the monomer material or the prepolymer material, such that with (a) or (b) said material layer is fully cured, or with (c) said material layer polymerizes at room temperature to a first level at which viscosity of the monomer material or prepolymer material is increased to a point that the monomer material or the prepolymer material does not leak out from between the substrate surfaces, followed by removal of the non-deformable spacers, and completion of the polymerizing at said elevated temperature so that the material layer unrestrainably shrinks in a direction perpendicular to the substrate surface or the substrate surfaces, wherein said polymerizing of said material layer is conducted in such a manner that deformation of macromolecules forming the monomer material or the prepolymer material, which is induced by an anisotropic mechanical strain due to shrinking the material layer in contact with and parallel to the substrate surface or the substrate surfaces, is permanently frozen-in by cross-polymerization; and

(3) cooling said material layer following said polymerizing to room temperature; wherein

the mass of said monomer material or the prepolymer material

and thus the thickness of the OCL (d_{OCL}) is selected such that optical thickness of the OCL fully cured equals the optical thickness of the LCL ($\Delta n_{\text{OCL}} \times d_{\text{OCL}} = (\Delta n_{\text{LCL}} \times d_{\text{LCL}})$).

21. (New) A process for manufacturing an optical compensation layer (OCL) for angular compensation of phase retardation of a transmitted light through a system including two cross polarizers with a liquid crystal layer (LCL) and the OCL inbetween, with the OCL being composed of a monomer material or a prepolymer material and having an optical axis perpendicular to a surface thereof, wherein the LCL is used in combination with the two cross polarizers, and said OCL and said LCL have an optical thickness which is a product of birefringence (Δn_{OCL} , Δn_{LCL}) and thickness of the layer (d_{LCL} , d_{OCL}) respectively, said process comprising (1) pouring a predefined mass of the monomer material or the prepolymer material over

- (a) a rigid substrate surface,
- (b) between two rigid substrate surfaces separated by deformable spacers, or
- (c) between two rigid substrate surfaces separated by non-deformable spacers,

to form a material layer;

(2) polymerizing said material layer at an elevated temperature which is lower than a glass phase transition

temperature of the monomer material or the prepolymer material, such that with (a) or (b) said material layer is fully cured, or with (c) said material layer polymerizes at room temperature to a first level at which viscosity of the monomer material or the prepolymer material is increased to a point that the monomer material or the prepolymer material does not leak out from between the substrate surfaces followed by removal of the non-deformable spacers, and completion of the polymerizing at said elevated temperature so that the material layer unrestrainably shrinks in a direction perpendicular to the substrate surface or the substrate surfaces, wherein said polymerizing of said material layer is conducted in such a manner that deformation of macromolecules forming the monomer material or the prepolymer material, which is induced by an anisotropic mechanical strain due to shrinking the material layer in contact with and parallel to the rigid substrate surface or the substrate surfaces, is permanently frozen-in by cross-polymerization; and

(3) cooling said material layer following said polymerizing to room temperature; wherein

the mass of said monomer material or the prepolymer material and thus the thickness of the OCL (d_{OCL}) is selected such that optical thickness of the OCL fully cured is smaller

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than the optical thickness of the LCL $(\Delta n_{\text{OCL}} \times d_{\text{OCL}}) < (\Delta n_{\text{LCL}} \times d_{\text{LCL}})$.